

PERFORMANCE WORK STATEMENT
For
Product Manager Tactical Cyber Network Operations (PdM TCNO)
Unified Network Operation (UNO) Planner v1.1
(DRAFT)

14 April 2022



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Controlling Organization: PdM Tactical Cyber Network Operations (TCNO)

CUI Category(ies): CTI

POC: pdmtcno_cui_marking@army.mil

1. GENERAL: This is a non-personal services contract for the Contractor to provide software development for UNO Planner v1.1 application. UNO Planner v1.1 will be evaluated for PdM Network Modernization Next-Gen Troposcatter (TROPO, TRC-244) Initial Operational Test & Evaluation (IOT&E).

1.1 Description of Services: The Contractor shall provide personnel, equipment, supplies, facilities, transportation, tools, materials, supervision, and other items necessary to perform the continuing development of UNO Planner v1.1 as defined in this Performance Work Statement (PWS) except for those items specified as government furnished property and services. The Contractor shall perform to the standards in this contract.

1.2 Background: The Program Executive Office, Command, Control and Communications Tactical (PEO C3T) located at Aberdeen Proving Ground (APG) has deployed various types of tactical radios to provide Command and Control (C2), Situational Awareness (SA) and voice services for mission needs at the tactical edge. Currently, the United States Army is modernizing the tactical networking capabilities to address concerns about the complex processes required to plan, manage, train, and maintain those networks.

To meet these capability gaps, PdM TCNO seeks to establish to the maximum extent possible an automated data processing system to improve the U.S. Army's Network Operations (NetOps) capabilities at the tactical edge.

PdM TCNO has engaged in Other Transaction Agreements (OTAs) effort since 2018 to develop software applications that integrated various Government Off-The-Shelf (GOTS) / Commercial Off-The-Shelf (COTS) Network Operations (NetOps) solutions under one common-user interface. These OTAs efforts included, the Unified Network Operations (UNO) Planner; the radio network planner, Atom, for lower-tier; Information Repository Integrated System (IRIS); Network Operations Management System (NOMS), and Integrated NetOps Battalion and Below (INB2). This PWS addresses the requirements for continuing development from UNO Planner v1.0 baseline as well as new requirements identified in the UNO Planner System/Subsystem Specification (SSS) v1.1.

The UNO Planner v1.0 prototype is a single application with planning coverage for both Upper-Tier Tactical Internet (UTI) and Lower-Tier Tactical Internet (LTI) networks and assets, providing a common look and feel from Division (DIV) to Company (CO). UNO Planner is developed with two adaptations: a full-featured version anticipated for employment at DIV/Brigade (BDE), and a lightweight version focusing on a set of networks and assets anticipated at Battalion (BN) and below – that is, primarily LTI radios/waveforms, asset planning and loading. Figure 1.2.1 shows the integrated architecture incorporating the LTI backend components from Atom into the complete UNO Planner application.

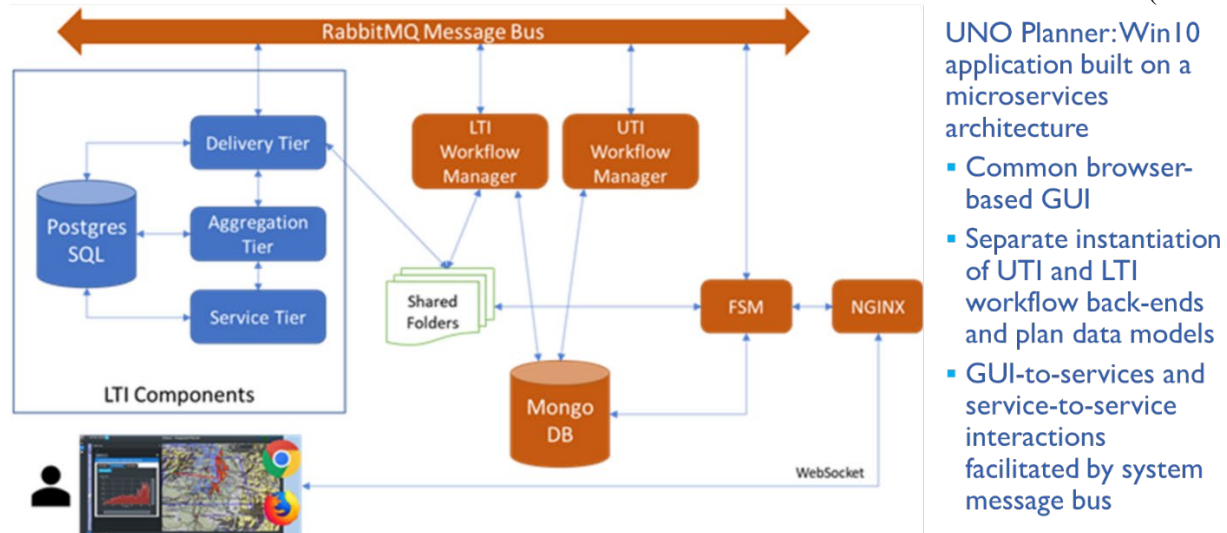


Figure 1.2.1: UNO Planner v1.0 Integrated UTI / LTI architecture

UNO Planner v1.1 expands on v1.0 functionalities with additional supported networks and network assets such as Integrated Visual Augmentation System (IVAS) and High Frequency (HF) radios, and improving link analysis capabilities (e.g. Foliage, Retransmission Planning).

Collectively, this capability will enable the soldiers the ability to seamlessly modify, complete, and distribute their tactical networks. Overall, the system will provide Signal Soldiers with the flexibility to tailor their tactical networks to the mission's task and purpose. Figures 1.2.2 and 1.2.3 below provide an overview of UTI and LTI supported systems for UNO Planner v1.0.

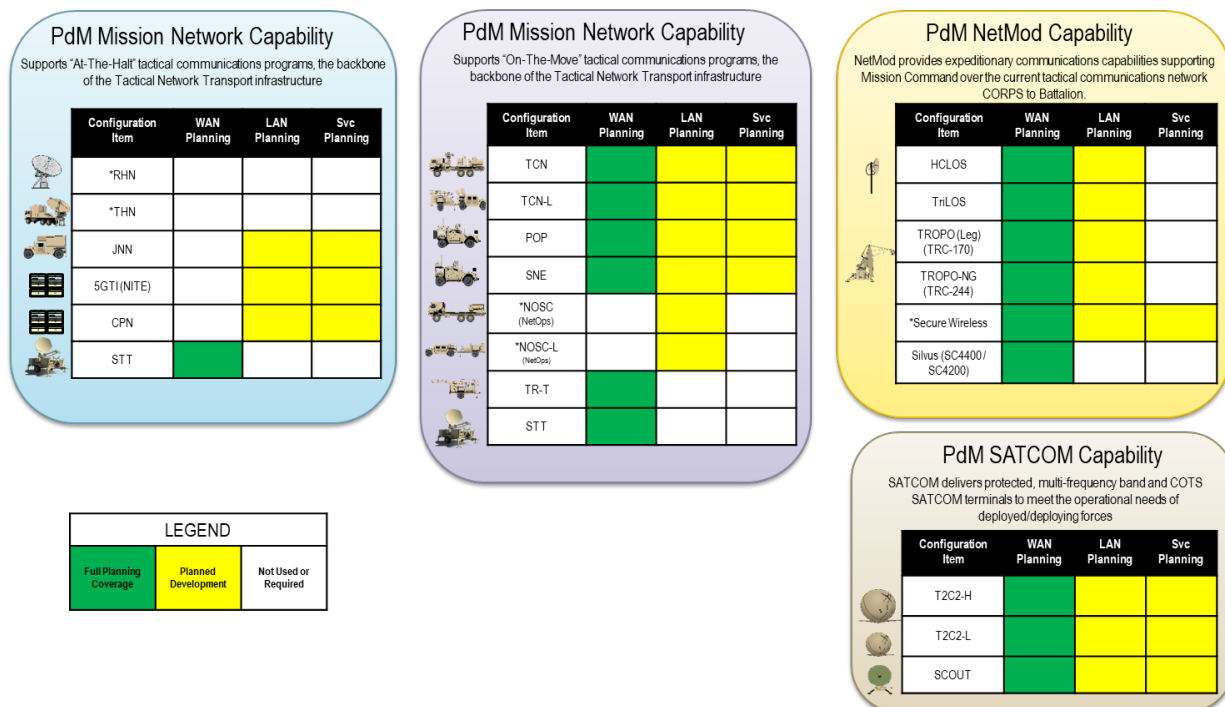


Figure 1.2.2: UNO Planner v1.0 supports UTI Network Elements

PM Tactical Radio

PM TR develops and fields the next generation of software-defined tactical radio systems, while also fielding and sustaining legacy/current force tactical radio systems. The tactical radios team supports the Army and other services by providing the right radio, at the right time, in the right place

Nomenclature	SINGARS (CT/SC/FH)	TSM 6.1	WREN (SAB)	UHF SATCOM IW	UHF SATCOM DAMA	MUOS	SINGARS (CT2/FH2)	VULOS	HQII	HF	MeshUltra	MN-MIMO	WREN-NB	SATURN	SINGARS (FH3)
PRC-170															
PRC-171															
PRC-166 (TW-875)															
PRC-168 (TW-950)															
PRC-148C															
PRC-148D															
PRC-158															
PRC-162															
PRC-163															
Combat Net Radio															
PRC-160															
DOMO Radio															
SC-Lite-4200															

*Adhering to Requirements as per PM TR

LEGEND

V1.0 Planning Coverage	V1.1 Planning Coverage	V1.x Planning Coverage	Not Used or Required
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Figure 1.2.3: UNO Planner v1.0 Supports Radios/Waveforms

UNO Planner will be hosted on a fielded laptop and/or tablet such as the Ruggedized Application Platform–Tactical Radio (RAP-TR). It has open extensible interfaces for the exchange of data with IRIS and other NetOps System as depicted in Figure 1.2.4. Collectively, these systems enable the Soldiers to seamlessly modify, complete, and distribute their tactical level radio plans and radio configuration files. IRIS is a distributed system with data synchronization capabilities and provides a common Application Programming Interface (API) to exchange network information. At the Brigade TOC and Battalion and Below, UNO Planner will be able to ingest IRIS initialization data (using a common API) needed to plan the radios, as IRIS Common Data will include baseline configuration data, Unit Task Organization (UTO), and create an initial radio plan. Completed radio / communication plans and configuration files will be sent to IRIS.

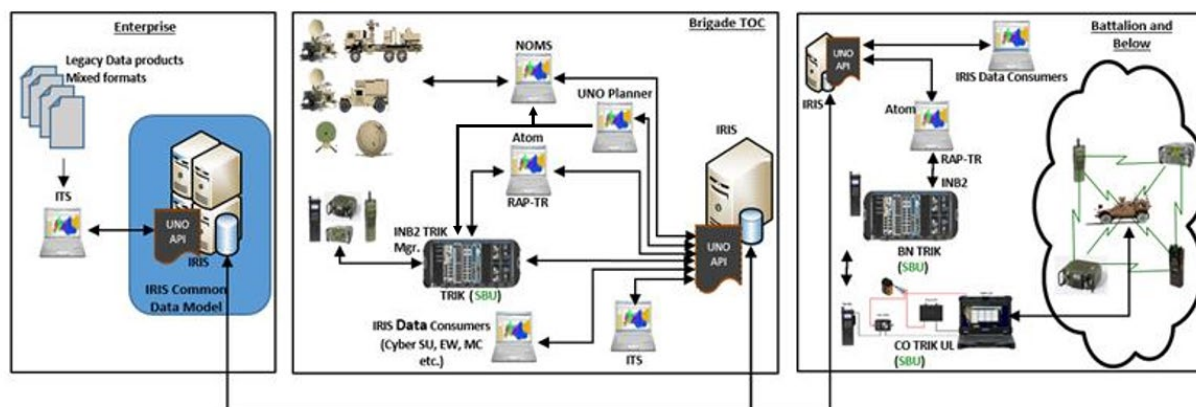


Figure 1.2.4: UNO Planner Interfaces to IRIS/UNO API & Other NetOps System

UNO API is the single interface middleware for all components to exchange information between each other, including both transient/ephemeral and persistent information as depicted in Figure 1.2.5 below.

UNO API Architecture

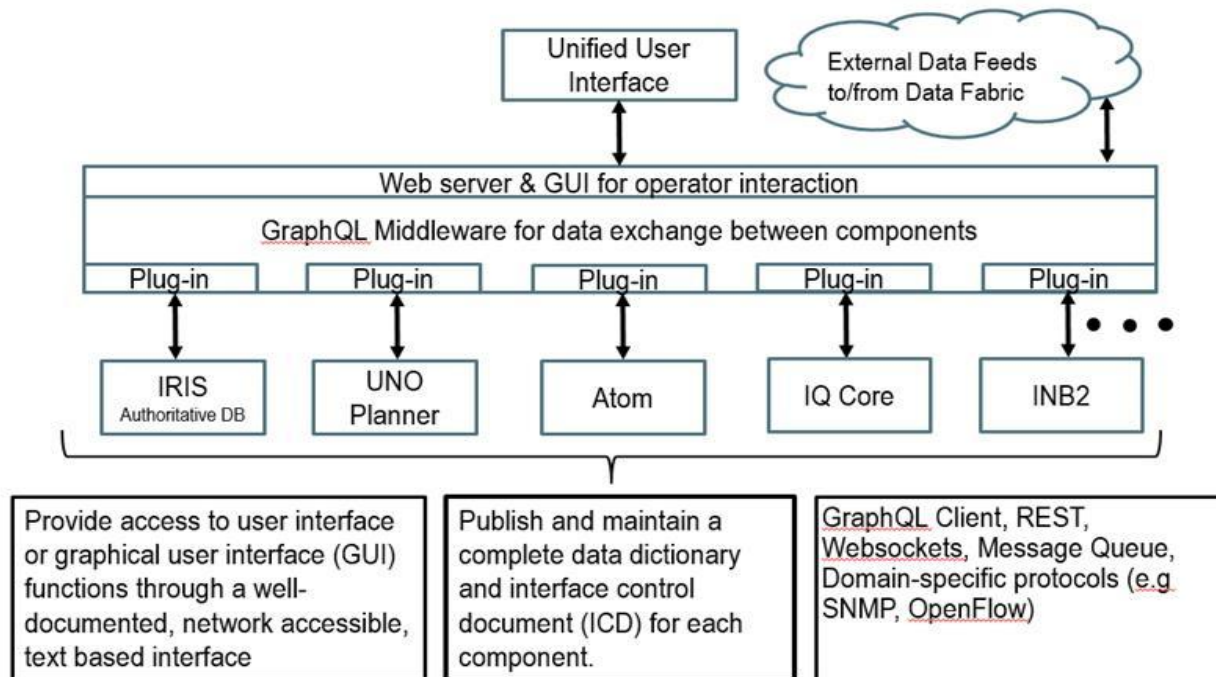


Figure 1.2.5 UNO API Architecture

1.3 Base-Year Tasks:

In furtherance of the Government's goals for UNO Planner operation outlined in the above Background paragraph 1.2, the Contractor shall, in the performance of this contract, perform the following tasks:

- Implement requirements as defined in the UNO Planner System/Subsystem Specifications. v1.1
- Perform the system enhancements to improve reliability and responsiveness.
- Participate in IRIS/UNO API Technical Integrated Meeting/Technical Exchange Meeting.
- Instrument Government Test Events/Activities (e.g. TROPO-NG / TRC-244 Initial Operational Test & Evaluation, Follow-on Operational Test, Integrated Tactical Network, etc.) and resolve /fix software bugs as the outcome of each event.
- Resolve critical software Product Backlog Items (PBIs) based on collaboration agreed upon prioritization from supported test events, STPs demonstration/evaluation, training, Log demonstration.
- Maintain up-to-date applicable Risk Management Framework artifacts, evolving documentation, and training materials.
- Provide required support for RMF approval (ATO) for UNO Planner 1.x

1.3.1 Optional Tasks:

1.3.1.1 UNO API: Carry out IRIS / UNO API integration as the UNO API criteria is further defined to contain resources related to API standards to ensure subcomponent system integration & interoperability.

1.3.1.2 Government Test Events / Activities: Instrument additional government test events / activities beyond TROPO-NG OT, to include travel, on-site support, usability and task-alignment feedback incorporation.

1.3.1.3 On-The-Move (OTM) Link Analysis: Implement On-The-Move planning functionalities, including signal analysis for LTI networks.

1.3.1.4 LTI SFAF Functionalities: Increase capabilities for Standard Frequency Action Format (SFAF) ingest / creation to include LTI waveforms.

1.3.1.5 Enhancements Features: including Next Generation Load Device (NGLD), Integrated Network Operations for Battalion and Below (INB2) integration, plans comparison, higher validation for training success, etc.

1.3.1.6 SSGF Map Formats: Enhance capabilities of GIS data formats to incorporate Standard and sharable Geospatial Formats vision.

1.3.2 Option Year - Continuing Development and Enhancement Support

The Government may extend the term of this contract by written notice to the Contractor within 30 days before the contract expires subject to the availability of funding. The preliminary notice does not commit the Government to an extension. The scope of each option year period shall consist of the following:

1.3.2.1 Option Year Schedule:

Option Year 1: February 2023 - February 2024

Option Year 2: February 2024 - February 2025

The government reserves the right to execute optional tasks identified in section 1.3.1 during any of the option years.

1.4 Agile Development Approach:

UNO Planner v1.1 schedule shall align with Agile development methodology. The Contractor will use a government-approved DevOps tool suite that allows the government access into the

development process (e.g. Knowledge Management, development environment, PBI backlog, Sprint planning and progress, etc.)

The Project kick-off will start within thirty (30) calendar days after contract award. As part of the kick-off, PdM TCNO will designate a representative to act in the Product Owner and Stakeholder roles. The Product Owner in coordination with its stakeholders, will be responsible for adjusting the PBIs, adding and removing items and identifying priority during the Sprint Planning.

The PBIs for each Sprint will be selected from the Product Backlog. The priority of the Product Backlog will be collaboratively updated by the Government Product Owner and the Contractor at the Sprint Planning meetings prior to the start of each Sprint. The highest priority PBIs will then be assigned to the Scrum Teams for development in the next upcoming Sprint.

The Contractor shall provide a Project Closeout review that will address the implementation status of v1.1 requirements, Open PBIs, GAT / FQT Test Results, and CDRL status (including RMF artifacts, Training Manual / Material).

The Government may request the Contractor to provide interim Software Releases to support government testing and assessment throughout the development cycle.

1.5 Government Acceptance Testing (GAT) / Formal Qualification Test (FQT): There will be GAT / FQT for v1.1 final software release. GAT / FQT shall be performed by Contractor and witnessed by Government personnel. GAT / FQT can be executed at either Government and/or combined Government/Contractor facility.

The contractor shall develop and maintain a Software Test Plan (STP) and Software Test Description (STD) describing in detail how each SRS requirement will be fully verified, as well as including each test case duration and location.

2. SPECIFIC TASKS

2.1 System Capabilities: The Contractor shall develop, maintain, secure, and improving the baseline UNO Planner v1.1 software to meet the requirements allocated to the inclusive UNO Planner v1.1 as defined in the UNO Planner v1.1 System/Subsystem Specifications (SSS). The application shall be hosted on the Ruggedized Application Platform–Tactical Radio (RAP-TR) laptop and tablet form factors.

2.2 Product Demonstrations: The Contractor shall execute UNO Planner v1.1 product capability demonstrations while being hosted on the Ruggedized Application Platform–Tactical Radio (RAP-TR) at each sprint/quarterly completion review.

2.3 Risk Management Framework: The Contractor shall support Government activities to achieve and maintain a DoD 8510.01 Risk Management Framework (RMF) Assess-Only Approval or an Authorization To Operate (ATO) as applicable. The Contractor shall provide required activities and update artifact generation support for UNO Planner pertaining to DoD 8510.01 RMF assessment of a Confidentiality, Integrity, and Availability (CIA) impact level of Moderate, Moderate, and Moderate per CNSS Instruction No. 1253, and NIST Special Publication 800-53R4.

2.4 Public Key Infrastructure: Public Key (PK)-enabling involves replacing existing or creating new user authentication systems using certificates instead of other technologies, such as user identification and password or Internet protocol filtering; implementing PK technology to digitally sign, in a legally enforceable manner, transactions and documents; or using PK technology, generally in conjunction with standard symmetric encryption technology, to encrypt information at rest or in transit.

2.4.1 PK-enabling: The Contractor shall provide the stand-alone capability to support the use of X.509v3 public key certificates for security services such as authentication, confidentiality, data integrity, and non- repudiation.

2.4.2 DoD PKI: The Contractor shall provide an off-line utility that allows the importing of UNO Planner Radio Configuration File (RCF) signing certificates and associated private key, in the JENM PKCS #12 Format specified in Section 4.5 of the following document: "Communications Electronics Research Development Engineering Center (CERDEC) Public Key Infrastructure (PKI) Radio Digital Certificate Processing Guide, Version 4.0, dated 08 NOV 2017. The format of the X.509v3 Subordinate CA certificate and UNO Planner RCF signing certificate encapsulated in the PKCS #12 file accepted by UNO Planner shall be as described in Sections 4.2 and 4.3 of the aforementioned PKI Radio Digital Certificate Processing Guide.

2.5 Contractor Training Requirements:

2.5.1 Army Training Certification Tracking System(ATCTS): All Contractor employees with access to a government information system (IS) such as the Defense Intelligence Information Enterprise (DI2E) or a government owned computer, shall be registered in the ATCTS (Army Training Certification Tracking System) at commencement of services, and shall successfully complete the DOD Information Assurance Awareness i.e., the one hour DOD Cyber Awareness Challenge available at: <https://public.cyber.mil/training/cyber-awareness-challenge/> prior to access to the IS and then annually thereafter. To enable access to ATCTS by Contractor employees without a Common Access Card (CAC), PdM TCNO will, upon request, serve as the sponsor for the affected employees.

2.5.2 IA Awareness: All Contractor employees and associated Subcontractor employees shall complete and maintain the DOD IA awareness training for every 12 month period, i.e., the DOD Cyber Awareness Challenge available at: <https://public.cyber.mil/training/cyber-awareness-challenge/>, before issuance of Government network access or access to a Government-owned computer. The Contractor's technical lead for the RMF assessment shall comply with DOD requirements in DoD 8570.01-M for a minimum IAT Level of "Level I".

2.5.3 IA/IT Certification: For information assurance (IA)/information technology (IT) certification, per DoD 8570.01-M, the Contractor's technical lead for the RMF assessment shall be appropriately certified upon contract award. The baseline certification as stipulated in DoD 8570.01-M for IAT Level I or higher shall be completed upon contract award by the Contractor's technical lead for the RMF assessment. This baseline certification requirement is met only after the technical lead has successfully obtained one (1) of the following DoD approved IAT Level I, II, or III certifications listed on the following DOD website: <https://public.cyber.mil/cw/cwmp/dod-approved-8570-baseline-certifications/>.

2.5.4 Special Qualifications: The Contractor is responsible for ensuring The Contractor's RMF assessment technical lead possesses and maintains current Information Assurance Technician

(IAT) Level I, II, or III professional certification during the execution of this contract. The acceptable IAT Level I, II, or III certifications are listed on the following DOD website: <https://public.cyber.mil/cw/cwmp/dod-approved-8570-baseline-certifications/>."

2.5.5 Data Rights and Licenses: The Government shall have Government Purpose data rights for deliverables as per contract otherwise listing of assertions is to be clearly identified (e.g. incorporation of FOSS / COTS / IR&D software components with existing license restrictions).

2.5.6 Licensing Terms: When leveraging OSS, the vendor shall consider as they would other Commercial Items. The vendor shall ensure the UNO Planner software is license compliant considering individual software component license terms and conditions. Specifically, ensuring the software does not contain components with incompatible licenses (e.g. Apache 2.0 vs GPL 2.0).

3. CONTRACTOR TRAVEL

3.1 Contractor will be required to travel CONUS and to the Aberdeen Proving Ground (APG) area during the performance of this contract to attend meetings, conferences, and training events. The Contractor will be required to travel to off-site training locations in support of this PWS: Ft. Hood, TX; Ft. Bragg, NC; Ft. Campbell, KY; Ft. Stewart, GA; Ft. Gordon, GA; Ft. Carson, CO; Ft. Bragg, NC; Joint Base Lewis-McChord, WA; Ft. Riley, KS; Ft. Drum, NY; Ft. Polk, LA; Ft. Bliss, TX; Ft. Benning, GA; etc.

3.2 Contractor will be authorized travel expenses consistent with the substantive provisions of the Joint Travel Regulation (JTR) and not exceed the amount of Travel funds specified in this contract. All travel requires Government approval/authorization and notification to the COR in advance of scheduled travel.

4. GOVERNMENT FURNISHED EQUIPMENT/MATERIALS

4.1 Services: The Government will periodically provide Soldiers to assess and provide feedback on UNO Planner v1.1 workflows, usability, and training materials. The Government will provide personnel to assist the Contractor with the execution of demonstrations and in the obtaining of appropriate badging. All Government Furnished Equipment and Information is attached to the solicitation.

4.2 Materials: The Government will provide the Contractor with the below listed documents, software and all appropriate system interface documents required to perform the tasks identified in this PWS. The material period of use will be from month one (1) through the end of the contract. All Government Furnished Equipment and Information is attached to the solicitation.

5. APPLICABLE PUBLICATIONS

5.1 General: The Contractor must abide by all applicable regulations, publications, manuals, and local policies and procedures in the performance of this contract. The Contractor shall adhere to the below listed publications and all Contractor personnel shall adhere to Government facility policies for work performed on Government facilities.

5.2 Applicable Publications:

Title	Version
Department of Defense Instruction (DoDI) 8510.01, Risk Management Framework (RMF) for DoD Information Technology (IT)	12 March 2014
Security Technical Implementation Guides (STIGs) and Supporting Documents: DoD CYBER EXCHANGE, Security Technical Implementation Guides (STIGS) site: https://public.cyber.mil/stigs/downloads	
Human Engineering (MIL-STD-1472G)	11 January 2012
MIL-STD-2525D, JOINT MILITARY SYMBOLOGY	10 June 2014
Data Item Description (DID) for Software Requirements Specification (SRS), DI-IPSC-81433A	11 January 2000
Data Item Description (DID) for Software Development Plan (SDP), DI-IPSC-81427B	11 January 2000
Data Item Description (DID) for Software Design Description (SDD), DI-IPSC-81435B	11 January 2000
Data Item Description (DID) for Software Test Plan (STP), DI-IPSC-81438A	11 January 2000
Data Item Description (DID) for Software Test Description (STD), DI-IPSC-81439A	11 January 2000
Data Item Description (DID) for Software Test Report (STR), DI-IPSC-81440A	11 January 2000
Data Item Description (DID) for Software Version Description (SVD), DI-IPSC-81442A	11 January 2000
Data Item Description (DID) for Software User Manual (SUM), DI-IPSC-81443 A	11 January 2000
The Minimum Elements For a Software Bill of Materials (SBOM) Pursuant to Executive Order 14028 on Improving the Nation's Cyber security	12 July 2021

